

What is claimed:

1. A M δ LK8 recombinant expression vector containing LK8 expression cassette comprising promoter, secretion sequence, LK8 cDNA represented by SEQ ID No: 1 and 5 terminator in that order, δ sequence for the multiple insertion of LK8 expression cassette into chromosome of a host strain, and neomycin resistant gene (neo) for the selection after the multiple insertion.
- 10 2. The M δ LK8 recombinant expression vector according to claim 1, wherein said promoter is GAL1 promoter, secretion sequence is α -factor secretion signal represented by SEQ ID No: 2, and terminator is CYC1 terminator.
- 15 3. A transformed *Saccharomyces cerevisiae* strain prepared by transfecting a host strain with the vector of claim 1.
- 20 4. The transformed *Saccharomyces cerevisiae* strain according to claim 3, wherein said host strain is selected from a group consisting of *Saccharomyces cerevisiae* BJ3501, *Saccharomyces cerevisiae* BY4742, *Saccharomyces cerevisiae* CEN.PK2-1D and *Saccharomyces cerevisiae* 2805.
- 25 5. The transformed *Saccharomyces cerevisiae* strain according to claim 3, wherein said strain is *Saccharomyces cerevisiae* BJ3501/M δ LK8 #36 (Accession No: KCTC 10582BP).

6. A method for preparing a transformant expressing LK8 protein highly, comprising the following steps:

5 (1) Transforming a host strain with the recombinant vector of claim 1;

1 (2) Culturing the transformant prepared in the step 1 after the treatment of G418 sulfate antibiotics; and

 (3) Selecting LK8 high expressing transformant by immunoassay.

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7. The method according to claim 6, wherein said G418 is treated by 5 - 20 g/L.

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8. The method according to claim 6, wherein said immunoassay is selected from a group consisting of colony immunoblotting assay, dot blotting assay and ELISA (enzyme linked immunosorbant assay).

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9. The method according to claim 6, wherein said step 3 is repeated once to three times.

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10. The method according to claim 6, wherein said step 3 consists of the following steps: 1) primary selection by colony immunoblotting; 2) secondary selection by dot blotting from the primary selected strains; and 3) final selection by ELISA from the secondly selected strains.

11. A method for mass-production of LK8 protein comprising the following steps:

(1) Preparing a transformed strain by inserting the recombinant LK8 gene expression vector of claim 1 into a host strain;

(2) Seed-culturing the transformed strain prepared in the step 1 and batch-culturing the strain in a liquid medium containing glucose and galactose as a carbon source, with keeping dissolved oxygen stable by regulating air supply and/or stirring speed;

(3) Fed-batch-culturing the culture solution of the step 2 with a feed medium containing galactose; and

(4) Purifying LK8 protein from the culture solution of the step 3.

15 12. The method according to claim 11, wherein said transformed strain of step 1 is a transformed *Saccharomyces cerevisiae* strain of claim 3.

20 13. The method according to claim 11, wherein said batch-culture of step 2 is performed with 1 - 3 vvm (5 - 80 l/minute) of air supply and/or 200 - 1000 rpm of stirring speed, in a liquid medium containing 1 - 5% (w/v) glucose and 1 - 5% (w/v) galactose as a carbon source, in which dissolved oxygen is adjusted to 40 - 90% of maximum dissolved oxygen.

25 14. The method according to claim 11, wherein said fed-batch-culture of step 3 is performed using a liquid

medium containing 10 - 50% (w/v) of galactose as a carbon source and regulating the supply speed of the feed medium in order to maintain the content of galactose in the medium as 0.5 - 5% (w/v).

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15. The method according to claim 11, wherein said purification of LK8 protein of step 4 is performed by chromatography.

10 16. The method according to claim 15, wherein said chromatography includes ion exchange chromatography and hydrophobic interaction chromatography.

15 17. The method according to claim 16, wherein said exchange chromatography is cation exchange chromatography and the elution of LK8 protein is performed with an eluting buffer (pH 4.0-8.0) containing 0 - 5 M NaCl.

20 18. The method according to claim 16, wherein said hydrophobic interaction chromatography is performed with 0 - 100 mM sodium phosphate eluting buffer (pH 4-8) containing 0.1 - 5 M ammonium sulfate and 0 - 500 mM NaCl for the elution of LK8 protein.